

APT Products

Product Overview

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Chapter 1: Getting Started

About This Guide

This short guide is intended to provide a high-level overview of all APT's products and services, their platforms, their deployments, and the scope of the functionality delivered.

Intended Audience

This guide is intended for anyone within APT's business sphere who wants to learn more about APT's products and services; this could include existing clients who already use one product, but want to learn about alternative deployment options, or internal APT staff.

How to Use This Guide

APT's products and services are grouped into themed sections of deployment types, and are labeled by their functional use rather than by their brand names.

Further Reading

- FIS APT Risk Model - FAQs
- APT Instrument Coverage Guide
- APT Risk Methodology Background

Chapter 2: About APT And Its Risk Management Solutions

- "What is APT?" on page 4
- "What does APT Provide?" on page 6
- "The APT Product Scope" on page 1
- "Market Data and Factor Modeling" on page 7

What Is APT?

FIS APT helps your business to effectively monitor and manage its investment risks. Whatever your investment strategy, market risk management is a critical requirement for an investment firm. It provides the basis for effective action to address the potential downside for you or your clients in all market conditions. APT's offering goes far beyond the necessary requirement to monitor risk and provides many tools that help you construct and optimize portfolios to help you maximize your portfolio-level returns.

Your risk management system needs to be:

- Flexible—provide a whole range of measures for a 360 degree view of your risks.
- Responsive to rapidly changing circumstances in global financial markets.
- Robust—provide risk forecasts which account for fat tails.

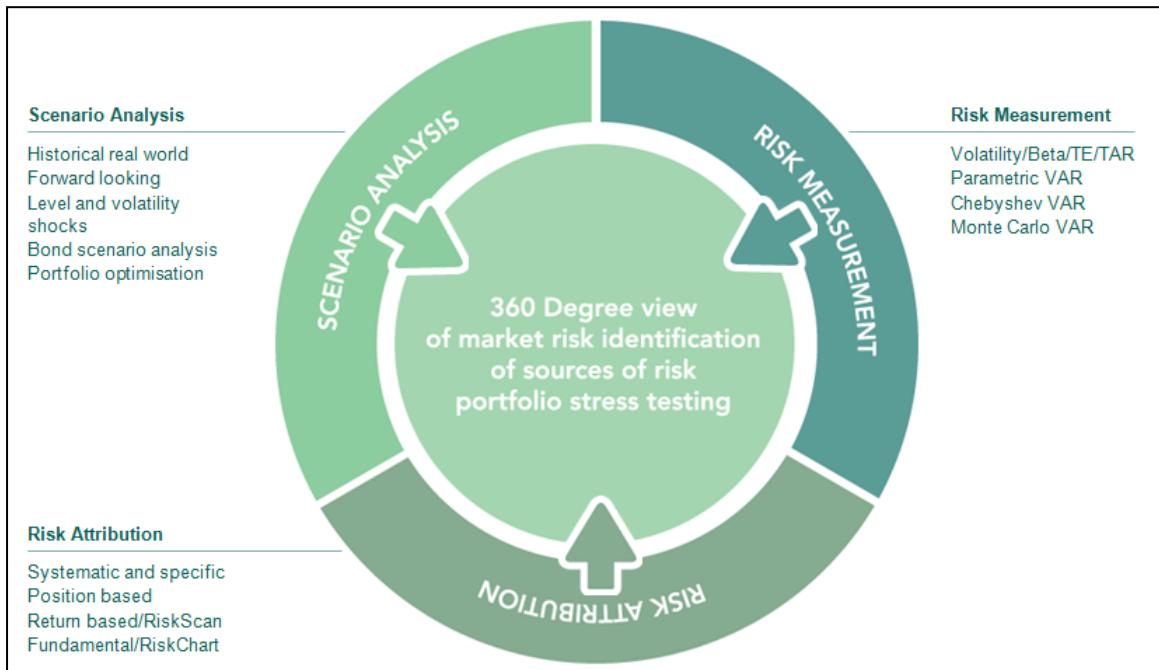
It also has to:

- Incorporate historical market shocks into your risk analysis, as well as scenarios you think may occur in the near future.
- Identify the biggest contributors to your risk, either by position or by factor exposures.
- Identify the best hedging strategies to mitigate the market risk aggregated at any level within the enterprise.

APT's products allow you to:

- Provide your management, clients and regulators with the risk information they need.
- Develop a clearer understanding of the dynamics of risk across all asset classes.
- Measure and monitor the risks associated with any market position or portfolio.
- Model and attribute portfolio risks so as to make better management, trading and hedging decisions.
- Aggregate risk across the enterprise to identify the systematic factors which have the greatest impact on the firm.
- Construct portfolios based upon the risk profiles of a pre-trade what-if analysis
- Optimize your current portfolios using quantitative analysis of the model universe, such as a set risk/return efficiency (i.e. Alpha profile)

This requires a 360 degree-view of market risk in what APT calls the Three Pillars of Risk Management.

Figure: 2-1

The Three Pillars of Risk Management

What Does APT Provide?

APT's calibrated multi-factor models provide a best of breed solution for portfolio construction and investment risk-reporting. The key features of this solution include:

- **Broad multi-asset class coverage**—APT produces a range of country and regional models with a blend of asset classes providing a risk forecast over different time horizons. Our current global model spans over 300,000 equities (public and private), rates, FX, credit, commodities, real estate, infrastructure, inflation, funds, and indices.
- **Robustness**—APT's statistical factor models robustly capture the maximum amount of variance and co-variances across markets. In addition, APT provides a coherent approach to risk on an absolute or benchmark-relative basis, for every kind of investment strategy.
- **Flexibility**—APT provides a full range of robust and responsive risk measures within a flexible framework for both risk attribution and scenario analysis.
- **Accessibility**—clients can interact with the factor models in a number of different ways:
 - Interaction through hosted, and deployed, batch-based report generation tools.
 - Interaction through client-rich applications for interactive analysis.
 - Interaction through programmatic API's.
 - Interaction through 3rd party offerings like SimCorp, FactSet, and other FIS trading and investment solutions.

Our clients use APT to generate customized portfolio risk reports that help them monitor, understand, and manage their market risk across a wide range of regions and asset classes. The reports can be tailored for any interested stakeholders including senior management, risk managers, quantitative analysts, portfolio managers, investors, clients, trustees, compliance, auditors, regulators, and partners.

Firms require portfolio construction tools to build better-performing funds. APT allows them to achieve this by quantifying the trade-offs between risk and return among their investments, providing recommended trades consistent with the manager's mandate.

Market Data And Factor Modeling

APT factor models

APT's core product are its factor databases. These capture the underlying volatility of a whole series of different markets and regions, which can be analyzed from the perspective of your specific holdings using the available APT tools and applications to provide risk reports. These models provide up-to-date risk profiles for a vast number of public and private equities, bonds, funds, commodities, FX and indices. APT's multi-factor models are calibrated for a geographic region, type of investment, and investment horizon, and are typically delivered to deployed users with a daily, weekly, or monthly frequency.

See the *Factor Models* section in the *APT Modeling Guide* and the *APT Data Product Guide* for further information.

APT's economic scenario generator

The APT Economic Scenario Generator is an economic simulation tool that can simulate the impact of inflation upon long term investments using shocked economic variables. It is of particular interest to investment fund managers, as it can simulate both portfolio VaR and VaR Below Zero risk measures which reflect the long-term impact of inflation; these measure can feed into capital adequacy and solvency margin reporting.

The Economic Scenario Generator is designed to realistically model the medium-to-long-term behavior of economic variables (interest rates in all major currencies, realized inflation, break-even inflation curves, credit spreads and foreign exchange rates) and assets, using robust statistical models which are specifically chosen for this purpose. The methodology and calibration of the Economic Scenario Generator is fully transparent, with users able to view and override any of the parameters used.

In addition, the detailed scenario-level output of economic variables and asset returns can be used for Dynamic Financial Analysis.

See the *Economic Scenario Generation* section in the *APT Modeling Guide* for further information.

Historical and forward-looking scenarios

To help users analyze their portfolios in stressed market conditions, APT supports two forms of scenarios:

- Historical Scenarios
- Forward-Looking Scenarios

Scenarios in APT are constructed by shocking a set of explanatory factors. These shocks can either be level shocks (1st moment), which imply a change in value on the factor and hence on your portfolio, or as volatility shocks (2nd moment), which imply a change in risk on the factor and hence on your portfolio. The amount these shocks affect your portfolio depends on how well the portfolio's risk is explained by the factors; hence scenario analysis is closely related to factor-based analysis.

In developing our methodology for historical scenario recreation, we have attempted to remove much of the subjectivity or minimize the effects of subjective decisions – making the output as robust as possible.

Historical scenarios can be combined in various ways in order to generate *forward-looking* scenarios based on expectations of shocks provided by any authority. The APT document *Lessons from History* sets out several ways in which plausible forward-looking scenarios can be generated.

See the *Historical Scenarios Available for APT Factor Models* document for further information.

Chapter 3: APT Analysis And Risk Reporting Tools - Delivered Three Ways

The APT risk analysis and reporting tools are delivered in three ways:

- As a suite of desktop applications. See "[The APT Desktop Suite](#)" on page 10
- As a hosted Web service where clients submit jobs themselves. See "[APT Hosted Enterprise](#)" on page 19
- As a complete managed service where APT handle all of the client's risk reporting requirements and deliver the risk reports when required. See "[APT Enterprise Managed Services](#)" on page 21

The APT Desktop Suite

Many clients want to run APT and keep their data within their network. There are desktop solutions for interactive analysis, and batch solutions for high-volume back-office reporting.

These solutions include:

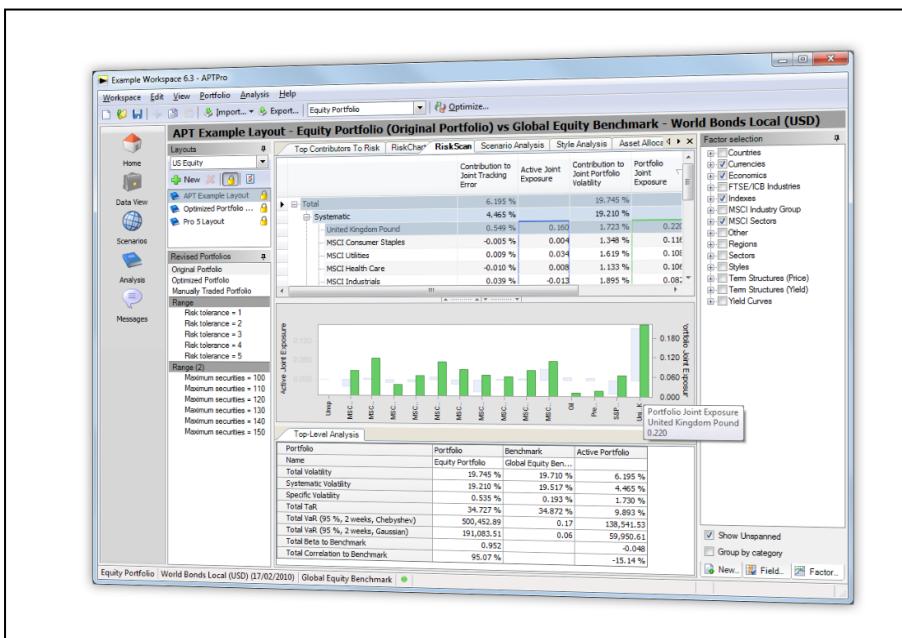
- APTPro—for interactive, unscheduled, risk analysis and portfolio construction at low volumes.
- APT Integrator—for batched-based risk reporting from either a desktop or server deployment with database storage of results.
- APTxVAR—for interactive, unscheduled, risk analysis in MS Excel.
- EasyAPT—for quick, templated-reporting in MS Excel.

All of the above desktop products are summarized in the subsections that follow. Please also refer the "Integration with FIS Solutions" on page 31 and "Integration with Third Party Solutions" on page 41 sections for details of the use of these desktop products in other integrated solutions.

Interactive Risk Analysis and Portfolio Construction (APTPro)

APTPro is APT's flagship desktop application for portfolio construction, pre-trade analysis (using the fully integrated optimizer or by applying manual trades on your portfolio), and interactive risk analysis.

Figure: 3-1



APTPro displaying RiskScan, Factor Exposures chart and Top-Level Analysis

PRODUCT FEATURES

APTPro allows you to analyze portfolio risk your way. It supports a wide range of analytics including:

- Full range of robust risk measures such as Total Risk, Tracking error, Tracking at Risk (TaR), Parametric and Monte Carlo VaR, cVaR, and implied return.
- Risk attribution including RiskScan and RiskChart factor-based analysis, position-based analysis with either categorical or numerical bins, risk budgeting (also known as allocation analysis) and relative analytics.
- Fund of fund drill down and analysis, including support for per-fund composite benchmarks.
- Fixed income analysis including Effective duration, Macaulay Duration, Duration to First Call, Convexity, Yield Curve Scenario analysis and Key Rate analysis.
- Scenario Analysis using APT Historical Scenarios, or user-scenarios defined as factor shocks. Risk attribution in Scenario Analysis is available in drill-down through to the individual asset level.
- Style analysis using APT Style Scores and Style Factors.

The APT Optimizer, which is embedded within APTPro, allows clients to define their overall risk and return preference and a broad range of constraints that define the investment strategy that include:

- Alphas using ranks or expected returns
- Portfolio and group-level constraints and penalty functions
- Security-level position and threshold constraints
- Turnover and trading limits
- Long short and leverage re-balancing

The asset coverage includes multi-asset class spanning public and private equities, rates, FX, credit, commodities, real estate, infrastructure, inflation, funds and indices within a fund of fund hierarchy.

APTPro supports:

- A simplified workflow to facilitate easy file importing in CSV and XML format.
- Powerful position-based analysis pages with multi-level grouping, filtering, allocation analysis, and flexible charting.
- Support for multiple portfolios, benchmarks and fund of fund hierarchy within a single workspace
- Support for multiple revisions of each portfolio.

- Fully customizable analysis reports and layouts; these reports are exportable to portable formats, including PDF, Excel, or HTML format - which allows APTPro to easily fit into your workflow.

PRODUCT DETAILS

- **How is it deployed?** Deployed using a Windows MSI installer.
- **APT responsibilities:** provision of Risk Model (available for download via FTP/HTTP) and Desktop software.
- **Client responsibilities:** the construction of portfolio compositions, benchmark compositions, and market data for assets not covered within APT's risk models in XML or text file formats. APT risk factor models needs to be downloaded and made available within your local area network. Software installation.
- **Release details:** one to two major releases per year.
- **Further reading:** *APTPro Manual, APT Instrument and Portfolio Setup Guide*

BENEFITS

- Flexible reporting
- Highly interactive

Deployed Batch Reporting Application (APT Integrator)

APT's Integrator application has been designed as a core platform for running APT risk analytics in batch mode and storing calculated results in a dedicated results database for valuation-date and historical analysis. The application accepts your holdings in APT's standard input format (in either text or XML formats), and executes a user-configured set of analytics on them.

Figure: 3-2

The screenshot shows the APT Integrator application window. At the top, there is a menu bar with File, Actions, Export, Help, and a Filter by Composition search bar. Below the menu is a navigation bar with three tabs: Jobs (selected), Compositions, and Analytic Parameters. The Jobs tab displays a table with Report ID (UCITSReport, DefaultReport) and Scenarios (All). The Compositions tab displays a table with Type (montecarlo, parametric), Confidence (99), Time Horizon (1d, 1d, 4w, 4w), and Simulations (10000, 10000). The Analytic Parameters tab is visible but not currently selected.

Type	Confidence	Time Horizon	Simulations
montecarlo	99	1d	10000
parametric	99	1d	
montecarlo	99	4w	10000
parametric	99	4w	

Configurable analytic parameters for UCITS reporting

The database schema can accommodate and record both job input submissions and analytic output, enabling you to build up a warehouse of analysis data which can be run and re-run over time.

The application has been specifically developed with a modular framework, which allows you to integrate your internal systems with APT's investment risk analytics.

PRODUCT FEATURES

APT Integrator's features include:

- User interface for job management, monitoring, and execution.
- Command line interface for loading jobs, executing analytics on jobs, and running reports.
- Asset coverage check for selected jobs with graphical representation of percentage (%) coverage.
- MS Excel data export, including portfolio reports and historical reports viewed on screen.
- Pre-formatted reports based on templates, such as a UCITS template.
- Support for the extension of asset coverage using APT's XDB and UDB technology.
- Use of APT COM API analytics engine for fast and robust calculations.

The analytics that APT Integrator provides include:

- Position-Based risk Analysis (PBA) report down to the individual asset level.
- RiskScan™ analysis, with the definition of user-defined explanatory factors.
- Parametric VaR, which can have a normal or Chebyshev distribution.
- Monte Carlo VaR, which can have a normal or fat-tailed distribution.
- APT Historical Scenario Analysis (for example, 2010 Euro Sovereign Crisis) or custom user-defined scenario analysis.

PRODUCT DETAILS

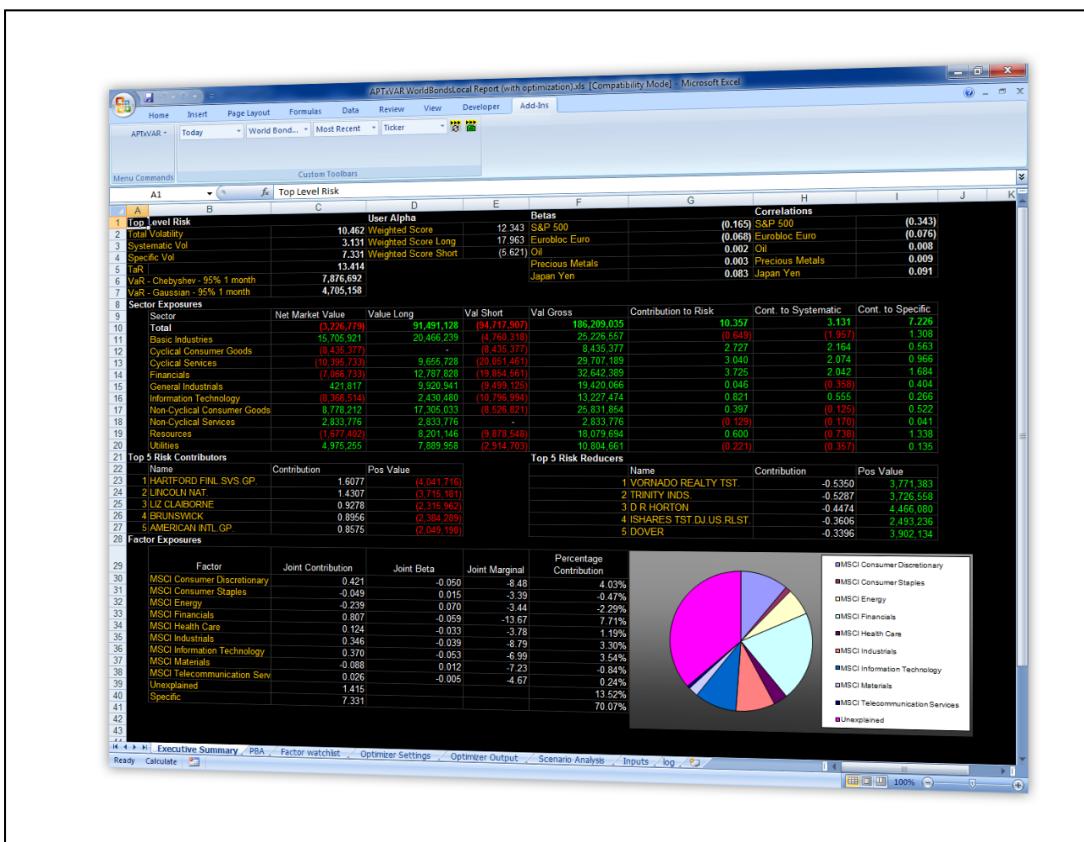
- **How is it deployed?** deployed to desktop or server machine by extracting zipped installation files and setting up properties file.
- **APT responsibilities:** provision of Risk Model (available for download via FTP/HTTP) and application software.
- **Client responsibilities:** the construction of portfolio compositions, benchmark compositions, and market data for assets not covered within APT's risk models in XML or text file formats. APT risk factor models need to be downloaded and made available within your local area network. Software installation.
- **Release details:** several major releases per year.
- **Further reading:** *APT Integrator User Guide*, *APT Instrument and Portfolio Setup Guide*

BENEFITS

- Modular framework allows easy integration with your internal systems and with APT's investment risk analytics.
- Deployable in either single desktop or server configurations.
- Results database allows historical analysis of risk reporting.
- Results database allows comparison between historical risk reports.

Interactive Reporting in Excel (APTxVAR)

APTxVAR (APT's Excel Add-In) brings APT risk forecast and attribution to Excel. It enables you to interactively analyze the market risk from within Excel using APT spreadsheet functions.

Figure: 3-3

An Excel worksheet, designed using the APTxVAR Excel Add-In, used to calculate Top Level Risk, Betas, Sector and Factor Exposures

PRODUCT FEATURES

The APTxVAR provides a wide range of APT analytics and provides a quick and simple solution to generate accurate risk estimates and highly customized Excel-based risk reports.

Analytics available include:

- Full range of robust risk measures such as Total Risk, Tracking error, TaR, Parametric and Monte Carlo VaR, cVaR, and implied return.
- Risk attribution including RiskScan and RiskChart factor-based analysis, and position-based analysis for marginal risk, VaR, beta, and correlation.
- Scenario Analysis using APT Historical Scenarios or user scenarios defined as factor shocks or correlations.
- Style analysis using APT Style Scores and Style Factors.
- Sensitivity analytics for a whole range of complex derivative instruments, such as Lookback Options, with the integration of the Adaptiv Analytics service through the APT XDB Manager.
- Convertible bond pricing and sensitivity analytics, such as Dollar Nuke, with the integration of the Monis Data Service and MONIS XL Add-In through the APT XDB Manager.

PRODUCT DETAILS

- **How is it deployed?** Deployed using a Windows MSI installer which will install the Add-in within Excel. Additional options are available to install the Adaptiv Analytics and Monis Data Service integrations where required.
- **APT responsibilities:** provision of Risk Model (available for download via FTP/HTTP) and Desktop software.
- **Client responsibilities:** the construction of portfolio and benchmark compositions made available within the MS Excel spreadsheet. Asset terms and conditions in XML or Text file format for additional coverage. APT Risk Models downloaded and available within your local area network. Software installation.
- **Release details:** one to two major releases per year.
- **Further reading:** *APTxVAR Excel Add-in Manual, APT Instrument and Portfolio Setup Guide*

BENEFITS

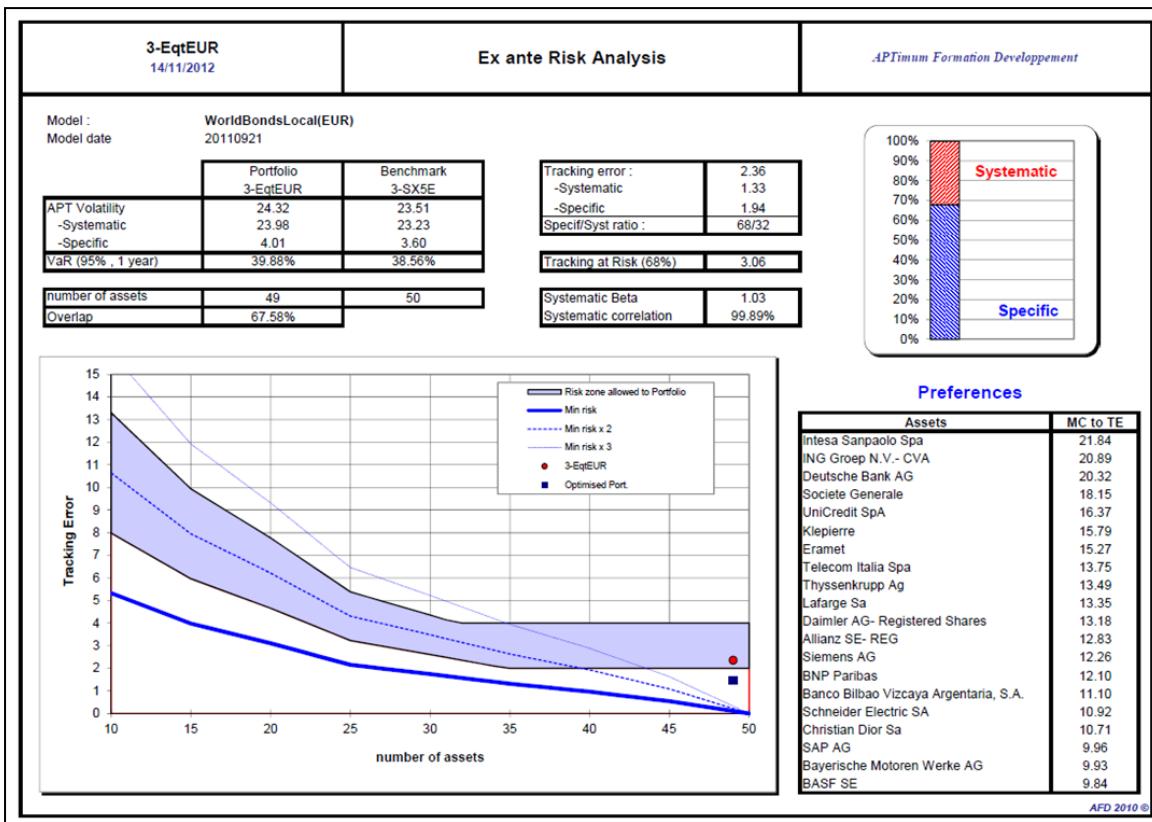
- Comprehensive analytics
- Fully customizable

Quick Risk Reporting in Excel (EasyAPT)

EasyAPT is a suite of Excel spreadsheets that allow asset managers to produce risk reports on their portfolios in a quick and simple way. Each sheet has been developed around a specific type of analysis and designed to show only the essential outputs from that analysis.

Each sheet contains an embedded application, to which the user needs to supply only basic portfolio information, and set up parameters. A tool is available to help you automatically validate your portfolio composition and proxy missing assets; see *APT Workflow and Data Integration Tools*. Once you have all the data in place for the FDB you want to use, you can quickly calculate the risk measures and view the results across a number of set pages. You can choose to print individual pages (or all pages) to a required format, such as PDF.

Figure: 3-4



EasyAPT sheet Equity Portfolio Risk Analysis

PRODUCT FEATURES

The EasyAPT sheets cover the following types of analysis:

- Equity Portfolio Risk Analysis**—All relevant risk indicators are available among which: Volatility, Tracking Error, Tracking-at-Risk®, accounting breakdown aggregative criteria, risk attribution, marginal contributors. Risk analysis on a simulated portfolio. Special Equity feature : Graph of the Best (best lowest risk portfolios mimicking the benchmark with a given number of assets).
- Bond Portfolio Risk Analysis**—All relevant risk indicators are available among which: Volatility, Tracking Error, Tracking-at-Risk®, accounting breakdown and risk breakdown on chosen aggregative groups, risk attribution, marginal contributors. Risk analysis on a simulated portfolio. Special Bond feature : Breakdown of volatility on durations, ratings, countries and issuer classification.
- Balanced Portfolio Risk Analysis**—Provides a complete, both absolute and relative, risk analysis of a portfolio. Asset allocation breakdown of risk (top down) and stock picking (bottom up). Risk breakdown in each asset class sub-portfolio. Risk analysis on a simulated portfolio.
- APT Monte Carlo Simulation**—Provides VaR and CVaR on both parametric and fat tail methodologies. Estimates tail risk measure on both linear and non-linear portfolios. Displays the resulting distribution function of the portfolio. Breaks down VaR to user-defined aggregation level or position level.

- **Stress Testing and Scenario Analysis**—Historical (Tech bubble, Sub-prime crisis, Asian crisis, etc) or customized scenarios. Provides a complete report of the portfolio and benchmark behaviors after the chosen volatility and level shocks scenarios. For each scenario, breaks down the effect on its corresponding explanatory variables.
- **Efficient Frontier Analysis**—Displays the Efficient Frontier vs the initial Portfolio and Benchmark positions for a given profile. Provides compositions of portfolios in the Efficient Frontier. Risk breakdown of each efficient portfolio.
- **Performance vs Risk Analysis**—Relative performance monitoring within risk envelopes. Comparison of a fixed quantity portfolio with an arbitrated portfolio if buys/sales have been imported.
- **Implicit Target Finder**—Replicates the portfolio systematic risk with a composition of indices or assets. Risk analysis on both the initial portfolio and the implicit target.
- **Hedge Fund Proxy Builder**—Mimics the systematic risk behavior of a hedge fund by combining alternative indices with daily prices. Construction of hedge fund proxies based on the combination
- **Liquidity Risk**—Provides the loss incurred if the entire or portion of the portfolio had to be liquidated. Calculations compliant with UCITS IV requirements on the liquidity risk. Portfolio breakdown to each position “level of liquidity”.
- **External Funds Risk & Performance Analyzer**—Risk attribution per aggregation criteria (geographical, sector and style). Identification of the fund peer group on the APT systematic correlation. Portfolio correlation analysis with APT-defined fund categories Special External Funds features: Provides for each fund or Fund of Funds: Peer Group, Most relevant and Adequate Category (Best Homogeneous Group), Historical performance analysis and rating (upon subscription to a feed from FUNDCLASS).
- **Historical Funds Risk Analyzer**—Risk attribution per aggregation criteria (geographical, sector and style). Fund behavior evolution over a defined period. Supports an instant analysis on a large range of funds. Special Historical Fund features: Provides for each fund or Fund of Funds, the independent risk attribution ie ranking of most correlated strategies (indices).

PRODUCT DETAILS

- **How is it deployed?** A zip file of spreadsheets (xls files) is distributed by APT, which are extracted and activated by separately supplied license codes. APT COM Optimizer is required to be installed on the same machine as a prerequisite.
- **APT responsibilities:** provision of Risk Models (available for download via FTP/HTTP) and Desktop software.
- **Client responsibilities:** portfolio compositions made available within Excel spreadsheet. Asset terms and conditions in XML or Text file format for additional coverage. APT supplies a Data Mapping Tool to aid asset coverage; see *APT Workflow and Data Integration Tools*. APT Risk Models downloaded and available within your local area network. Software installation.

- **Release details:** individual sheets are updated yearly
- **Further reading:** *EasyAPT Quick Start Sheets*

BENEFITS

- Easy to use
- Quick to set up
- Clear and concise presentation of information targeted at specific types of fund analysis

APT Hosted Enterprise

APT Hosted Enterprise is an enterprise-wide risk reporting service which is cloud-based. It supports flexible report design across complex hierarchies of portfolio types: fund-of-funds, multi-manager, with composite or LDI benchmarks, incorporating derivatives and unlisted and illiquid assets. Built using a service oriented architecture, and backed by a 150-node grid engine, this application provides a platform for:

- Data management and warehousing with an embedded workflow for data validation and exception management, supplemented with data-visualization tools.
- Flexible batch-based (high volume) and interactive reporting to satisfy regulatory and investor requirements.

Figure 3-5:



Drilling into a Heat Map on the APT Enterprise Dashboard

Product features

APT Enterprise 2.0 has the following features:

- An integrated risk management platform for Market Risk, Liquidity Risk, and Credit Risk.
- Customizable and standard risk reports (e.g. UCITS) which can be generated ad hoc or at scheduled frequencies in PDF, CSV and XML output formats.
- A large set of APT analysis types for inclusion in customized reporting including Top-Level Analysis, PBRA, APT RiskScan and RiskChart, Top Contributors to Risk, APT Historical Scenario Analysis , Bond Scenario Analysis, Uncorrelated Scenario Analysis, Parametric and Monte VaR, and so on.
- Preparation and availability of risk factor data (i.e. APT FDBs) and risk report job definitions by APT. Only a file upload of latest positions is required to trigger risk report generation.
- Secure file uploads and report delivery using a dedicated sFTP service.
- Online access to report summaries and drill-down through to a Dashboard of online risk reports which are configurable.
- End user security is controlled by an LDAP directory service, user accounts of which restrict access to both Enterprise functionality and data through membership of user groups.
- Hosted Enterprise is housed in a dedicated data center run by SunGard Availability Services (SAS), which provides Tier-3 level security. APT has provisioned a fail-over site for Disaster Recovery with near-time replication of data.

Product details

- **How is it deployed?** Software as a Service accessible by means of an internet browser.
- **APT responsibilities:** required risk profiles from factor models, risk report definition and generation, service availability (24/7, 365 days a year), security, and software upgrades and performance scaling.
- **Client responsibilities:** construction and upload of composition files for portfolios and benchmarks, terms and conditions and market data for user-defined securities, and positions. These can be uploaded using a dedicated UI, an sFTP service, or a REST Web service. Upload files are defined in CSV format to a set data schema.
- **Release details:** regular, scheduled monthly updates to the service which are managed by the APT Infrastructure team at off-peak times, typically on Sundays. Release Notes are published on the APT Knowledge Base at <https://scm-am.fisglobal.com/APTKB/>.
- **Further reading:** *APT Enterprise User Guide*, *APT Enterprise Data Administration Guide*, and *APT Enterprise Security Management Guide*.

Benefits

- SaaS with data management
- Performance analytics
- Customized investor
- Outsourcing of risk report preparation
- Regulator and enterprise-wide reporting
- No hardware or support costs
- No on-going maintenance costs
- Export composition details and volatility surfaces to APTPro

APT Enterprise Managed Services

Run by a dedicated global team of highly trained Operations specialists, APT offers a complete managed risk reporting service for its clients using APT Enterprise 2.0 as the core platform. This service includes full data management required to calculate risk and performance analytics followed by generation of reports customized to meet internal, regulatory and investor reporting needs. In addition to these reports, clients receive a diagnostics report which provides a full insight into the handling of data exceptions, asset coverage, default rating used for FI modeling and proxy definitions for securities with insufficient history. This service can be further supplemented with qualitative analysis from domain experts.

Service details

- **How is it deployed?** APT Enterprise 2.0 is used as the risk reporting platform, which is run and managed by APT Managed Services on behalf of the client. There is no need for clients to access the system, as reports are delivered remotely using sFTP.
- **Client responsibilities:** specification of risk reporting job and report layout requirements to APT.
- **APT responsibilities:** creation of automated risk report jobs and report layouts to clients' requirements. Generation of risk reports at frequency set by clients. Creation of all client compositions and positions, and obtaining and maintaining market data. Maintenance of sFTP service for delivering reports to client. Provision of qualitative analysis by APT Client Services when required.
- **Release details:** N/A
- **Further reading:** N/A

Benefits

- Complete data management and outsourcing of the risk reporting process
- Performance analytics
- Customized investor
- Regulator and enterprise-wide reports
- No data setup or maintenance overheads
- No hardware or support costs
- No on-going maintenance costs

Chapter 4: Deployed Programmatic APIs

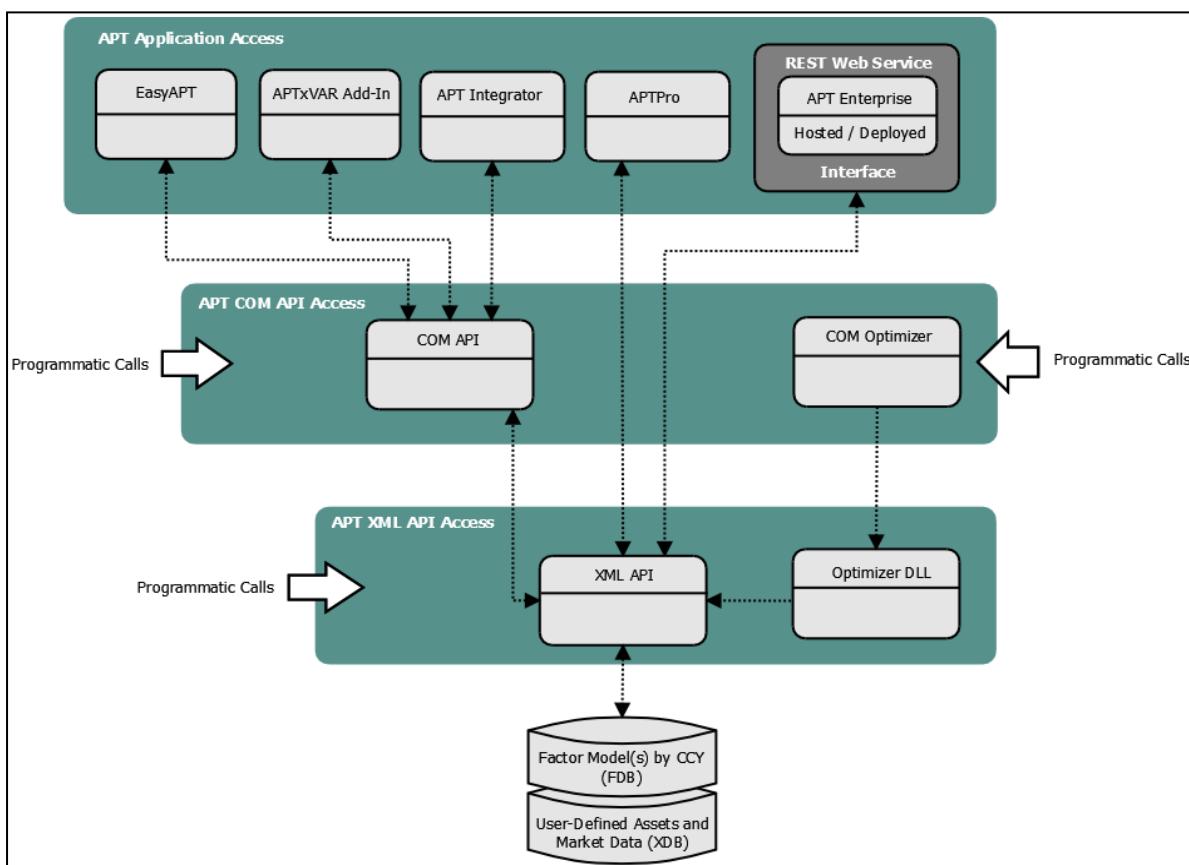
APT offers a wide range of APIs that allow you to integrate APT to your internal or 3rd party systems. They scale from embedding APT in user-generated spreadsheets for a single user to enterprise-wide deployments supporting through-puts of tens of thousands of portfolios. These APIs typically allow APT analytics to be called directly within your applications.

The programmatic APIs provided by APT may be broadly subdivided into two categories:

- A Microsoft Component Object Model (COM) Interface (COM API)
- An XML API

The COM APIs communicate through APT's XML API through to the risk factor models and analytics.

Figure: 4-1



FIS APT API architecture

Different COM APIs are available each of which address a different area of functionality. The analytical libraries available with APTxVAR Excel Add-In, with the extension of licensing, can be used with any application that is exposed to the COM API. Typically end users of MATLAB and R can call upon the APT analytic functions to display risk measure results in their applications through the COM API. In addition, APT's Professional Services can develop bespoke client reporting solutions, for example, using the COM API and VBA scripting in MS Excel.

In the XML API, all the functionality is brought together under a single umbrella. The XML API is a pure definition of discrete APT objects, which acts as a server to higher-level analytic requests. However, it can be called directly by command line requests by supplying XML input data for the analytic request. The choice of COM vs XML depends upon the scale of integration, choice of integration technology and the skill sets of the integration team.

Analytics API Using COM (APT COM API)

The APT COM API provides a number of COM interfaces that allow users to access APT's risk analytics. This is an ideal technology if you are considering Microsoft Office integration or a small to medium scale deployment of APT, supporting batch reporting in a non-distributed environment for 100s (rather than 1,000s) of portfolios. Users must write their own code to supply data, to invoke the APT analytics, and to process the results.

Product features

Analytics available using the APT COM API include:

- Risk measures such as Total Risk, Tracking error, TaR, Parametric VaR (Gaussian or Chebyshev) and Monte Carlo VaR.
- Risk attribution including RiskScan and RiskChart factor-based analysis, position-based analysis using APT or user data using groups defined from category data or numerical bins, and Risk budgeting (also known as allocation analysis).
- Scenario Analysis using Historical Scenarios or user-defined scenarios defined as a set of factor shocks or correlations.
- Fixed income analysis including Effective duration, Macaulay Duration, Duration to First Call, Convexity, Yield Curve Scenario analysis and Key Rate analysis.
- Style analysis using APT Style Scores and Style Factors.
- Sensitivity analytics for a whole range of complex derivative instruments, such as Lookback Options, with the integration of the Adaptiv Analytics service through the APT XDB Manager.
- Convertible bond pricing and sensitivity analytics, such as Dollar Nuke, with the integration of the Monis Data Service and MONIS XL Add-In through the APT XDB Manager.

Product details

- **How is it deployed?** Deployed using a Windows MSI installer.
- **APT responsibilities:** provision of Risk Models (available for download via FTP/HTTP) and software.
- **Client responsibilities:** development to integrate to the API. Portfolio compositions submitted to the COM interface. Additional coverage available using asset terms and conditions in XML or Text file format. APT Risk Models downloaded and available within your local area network. Software installation.
- **Release details:** one to two major releases per year.
- **Further reading:** *APT COM Server API Manual*

- **Examples:** extensive VBA examples are available demonstrating many of the interfaces. Additional examples in VB, C#, C++, Perl, PHP and MATLAB.

Benefits

- Simplified/functional API
- Most functionality is exposed via this API—some restrictions in terms of flexibility and limited optimizer functionality
- Good Excel integration

Optimizer APIs (APT Optimizer)

The APT Optimizer provides a number interfaces for Portfolio Construction and Optimization. This is available using one of the following interfaces:

- COM interfaces on Windows.
- Text files interface on Windows, Linux (Red-Hat) and Solaris.

Users must write their own code to supply data, to invoke the APT analytics, and to process the results.

Product features

The APT Optimizer is fully controllable using features that include:

- Alphas using ranks or expected returns.
- Portfolio and group level constraints and penalty functions.
- Security-level position and threshold constraints.
- Turnover and trading limits.
- Long short and leverage re-balancing.
- Portfolio optimization using your own covariance matrix or third party risk model.

In addition, a premium optimizer, which is capable of solving Second Order Cone Programming (SOCP) problems, supports features such as:

- Alpha Uncertainty
- Optimizing Absolute and Relative Risk (Volatility vs Tracking Error)

Product details

- **How is it deployed?** Deployed using a Windows MSI installer or platform specific tarball (.tar.gz).
- **APT responsibilities:** provision of Risk Models (available for download via FTP/HTTP) and software.
- **Client responsibilities:** development to integrate to the API. Portfolio compositions submitted to interface (COM or Text format). APT Risk Models downloaded and available within your local area network. Software installation.
- **Release details:** one to two major releases per year.
- **Further reading:** *APT COM Optimizer Manual*

- **Examples:** available in VBA, Java, C#, C++, XML command line, Txt command line (Windows and Solaris), Perl, SPlus and MATLAB

XML API

The XML API is a batch-oriented command line application with an XML-based interface that is capable of processing 10s of thousands of portfolios.

The XML provided to the API contains both the input data and a powerfully flexible programmatic interface. The XML API is a command-line tool with a complex but powerful programmable XML interface. The client provides the path to their input XML as the first argument and the path to where they want the XML results delivered as the second argument.

The XML API has had a number of successful deployments to date; the platform-independent nature of XML means it can be called from a number of different programming languages. From an integration perspective, the XML API application should be considered where there is a high volume of throughput, and the client prefers a tightly integrated deployment rather than a hosted solution.

In addition to the Command line interface available, APT also provide a Java servlet that allows the same XML API calls made to an Application Server using a RESTful interface over http. This provides you with a few key benefits for clients integrating to this product:

- Parallel execution of jobs is now easily available, rather than having to be managed by the client.
- Scalability is greatly enhanced as standard network hardware such as load balancers can be used to distribute requests across a cluster.
- The APTRemoteServerXml can be invoked remotely, allowing it to be called simply from any platform, and removing the need for local deployment of the APTServerXml on many machines.

Users must write their own code to supply data, to invoke the APT analytics, and to process the results.

Product features

The XML API provides direct access to the core calculation engine that is used internally by all APT's software (e.g. APTPro, APT COM Server, and APT Enterprise). As a result the XML API provides a super-set of all the functionality offered by each of these tools, covering APT's standard and value added analytics, including Monte Carlo, stress testing, optimization, full asset coverage.

Product details

- **How is it deployed?** Deployed using a Windows MSI installer. APTRemoteServerXml Java Servlet is deployed into an application server container such as TomCat.
- **APT responsibilities:** provision of Risk Models (available for download via FTP/HTTP) and software.

- **Client responsibilities:** development to integrate to the XML API. Portfolio compositions and asset terms and conditions in XML format. APT Risk Models downloaded and available within your local area network. Software installation.
- **Release details:** two to three major releases per year.
- **Further reading:** *APTSERVERXML Manual*, *APTREMOTESERVERXML Manual*
- **Examples:** extensive XML examples available.

Benefits

- Highly flexible API
- All APT analytics are exposed via this API
- Cross platform

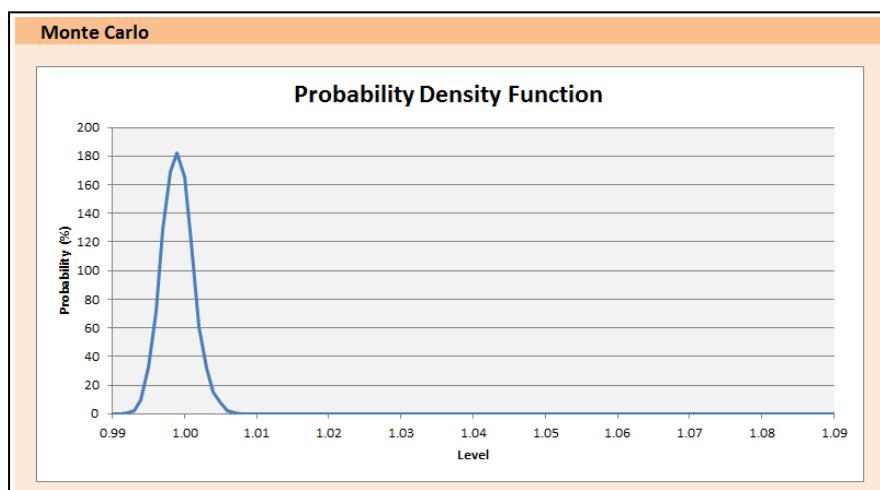
Chapter 5: Integration With FIS Solutions

- "APT and Adaptiv Integration (APT Plus)" on page 32
- "APT and Monis Integration (APT Monis)" on page 34
- "APT on FIS Front Arena" on page 36
- "APT on FIS Hedge 360" on page 38
- "APT on FIS Asset Arena" on page 39

APT And Adaptiv Integration (APT Plus)

APT Plus is an integrated, risk management solution from FIS Asset Management that is aimed at both buy-side and sell-side risk managers. It combines the linear multi-factor risk models from FIS APT, with the Adaptiv Analytics framework from FIS Adaptiv. On the one hand, the well-calibrated, linear models from APT capture the common variation of returns across different asset classes including equities, commodities, bonds, and FX rates. On the other hand, the Adaptiv Analytics framework allows for the forward price simulation and analysis of complex derivatives, but in the same term of volatility as the APT models. This integration leverages the advantages of the two systems in a *best of breed* solution that is able to deliver market, counterparty, liquidity, and credit risk analytics.

Figure: 5-1



Monte Carlo Simulation of PDF in APT Excel Add-In

Product features

Essentially, APT Plus represents an extension to the asset class set available in the APT risk factor models that you use. The following complex derivatives, which are supported by the FIS Adaptiv analytics framework, can be input into the APT system using the XDB Manager and regressed against your factor models:

Table: 5-1

Supported Asset Classes	Parametric Analytics	Monte Carlo Simulation
Asian Options , Barrier Options, Binary Options, Chooser Options, Cliquet Options, Compound Options, Forward Strip Options, Future Options, Look-back Options, Vanilla Options	Calculated Effective Duration, Volatility , Marginal Risk , RiskScan™ , Beta	Underlying prices, standalone and incremental VaR and CVaR, moments, levels, probability density functions

Once these instruments have been set up in the XDB Manager, the above analytics are available in APT Pro, APT Excel Add-In, and APT XML Server depending upon which research tool you have installed.

Product details

- **How is it deployed?** Deployed using a Windows MSI installer which will install all of the required components.
- **APT responsibilities:** provision of Risk Model (available for download via FTP/HTTP) and Desktop software.
- **Client responsibilities:** the construction of portfolio compositions, and benchmark compositions if required. All APT Plus assets need to be input into the APT system (using UI or XML, and market data for these assets also needs to be input and maintained. APT risk factor models need to be downloaded and made available within your local area network. Software installation.
- **Release details:** one to two major releases per year.
- **Further reading:** *APT Plus Getting Started Guide, Instrument and Portfolio Setup Guide*

Benefits

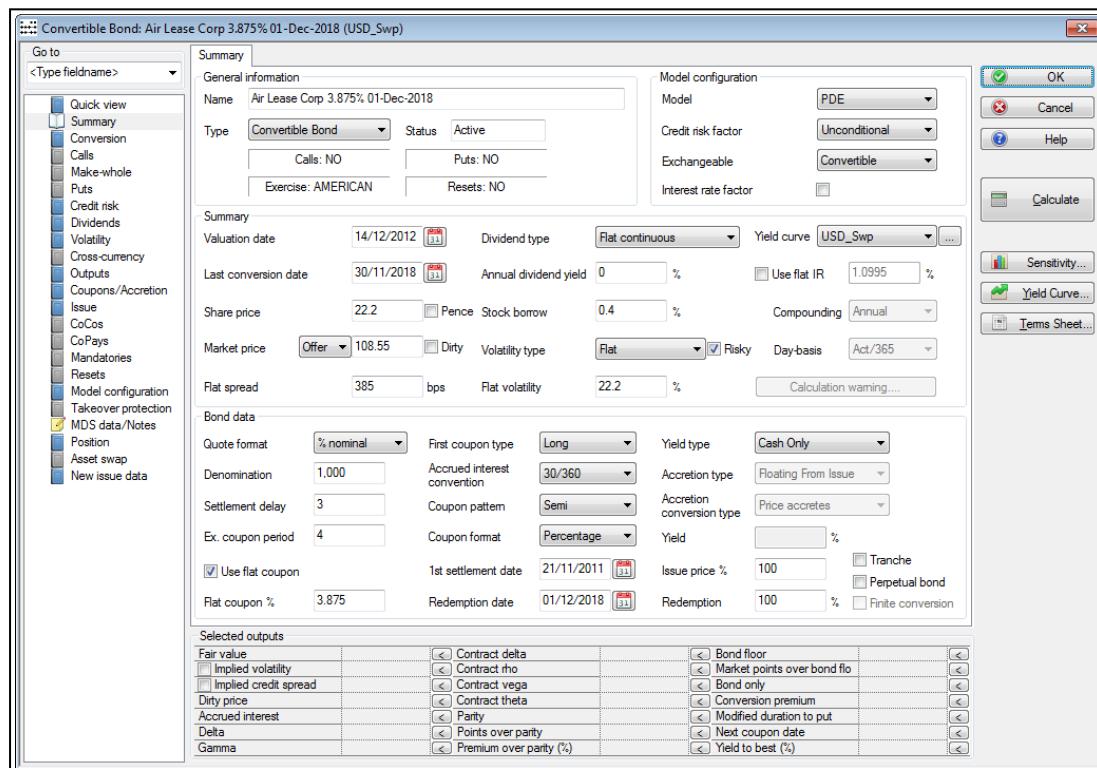
- Extension of existing asset class set
- Choice of APT desktop research tool
- Simplified input of T&Cs for highly-complex derivatives

APT And Monis Integration (APT Monis)

The integration of APT and Monis provides a flexible risk reporting system which delivers both portfolio-level risk metrics such as tracking error and its decomposition, and convertible bond risk factor sensitivities. The system is transparent, permitting you to view the details of individual holdings and to utilize the full range of Monis analytic capabilities on those holdings. It also provides consistent and intuitive reporting results; these results are based on common market data and terms and conditions, and a common analytical data framework.

The APT Monis integration delivers functionality required by both the middle and front offices. This solution will be of particular use to market risk managers, who need the single platform risk reporting functionality that it provides, and portfolio managers, who require its consistent and intuitive reporting results.

Figure: 5-2



Monis CB analytics of assets downloaded into the APT system

Product features

The system incorporates full access to the Monis Data Service (MDS), which allows all of the necessary convertible bond terms and conditions, in addition to the market data required for the integration to be downloaded and used for calculation with APT Analytics. This includes the constituents of the common convertible bond benchmarks.

These are imported and maintained directly within the APT XDB Manager, which are then automatically regressed against your APT bond factor models. The reports produced by the integrated system comprise both the full range of sensitivities provided by the Monis analytics engine, which are available to be viewed directly through the XDB manager (see above), and the market risk metrics provided by APT:

- Calculated Effective Duration
- Volatility
- Marginal Risk
- RiskScan™
- Beta

The above APT parametric analytics can be viewed using the APT Excel Add-In research tool by just quoting the ID of the Monis MDS assets.

Product details

- **How is it deployed?** Deployed using a Windows MSI installer which will install all of the required components.
- **APT responsibilities:** provision of bond Risk Model (available for download via FTP/HTTP) and Desktop software.
- **Client responsibilities:** the construction of portfolio compositions, and benchmark compositions if required. APT risk factor models need to be downloaded and made available within your local area network. Software installation.
- **Release details:** one to two major releases per year.
- **Further reading:** *APT Monis Getting Started Guide, Instrument and Portfolio Setup Guide*

Benefits

- Single integrated analytic platform for the buy-side and sell-side of CBs
- Flexible reporting solutions
- Automatic download of CB terms and supporting market data

APT On FIS Front Arena

FIS's Front Arena is a cross-asset solution that provides trade capture, real-time profit & loss, position control, risk management and sensitivity analysis for hedge funds, fund administrators, other alternative investment managers and financial institutions.

Its integration with APT allows for transfer of position information for the portfolios managed in Front Arena. This allows risk assessments and optimization to be made in APTPro 6 fed directly from positions maintained in the front office.

Figure: 5-3

The screenshot shows the Trading Manager interface with a context menu open over a position in the main grid. The menu path is 'APT' > 'GetConfirmation'. The main grid displays a portfolio structure with various sectors and sub-sectors, along with their current values and risk metrics. The context menu includes options like 'Hide Zero Positions', 'Instrument Level [Zero Position]', 'Hide Expired Positions', 'Hide Residual Sector Group', 'Hide Instrument Rows', 'Hide Subrows', 'View Trades', 'View Portfolios', 'View Order Books', 'View Time Buckets', 'View Scenario...', 'Remove Row', 'Expand Row', 'Collapse Row', 'Rename Row...', 'Labels', 'Sort', and 'Adjust Deposit'.

Front Arena's Trading Manager with APT context menu

With this seamless integration, you can right-click at any aggregation level in the portfolio sheet within Front Arena and transfer the relevant positions straight into APTPro for multi-asset class risk reporting, and portfolio optimization.

Figure: 5-4

Pricing	RecordType	ExportType	IDType	Id	ReconcileMessages
TPREAL 21/12/12 859.1		DELTA APPROX INTERNAL	TPREAL 21/		
TPREAL	ISN		ISN	TSERLES	
TPREAL 21/12/12 992.0		DELTA APPROX INTERNAL	TPREAL 21/		
TPREAL	ISN		ISN	TSERLES	
TPREAL INDEX CFD UB		UNDERLYING INTERNAL	TPREAL IND		
TPREAL	ISN		ISN	TSERLES	
SPX 6 P1225 OTC DB		DELTA APPROX INTERNAL	SPX 6 P122		
SPX	ISN		ISN	S&PCOMP	
SPX 6 P1350 OTC DB		CONTRACT PARAMS INTERNAL	SPX 6 P135		
SPX	ISN		ISN	S&PCOMP	
NDF_INR/USD_2012-05		CONTRACT PARAMS INTERNAL	NDF_INR/US		
INR			INR		
KOSPI 6 P240 OTC US		DELTA APPROX INTERNAL	KOSPI 6 P2		
KOSPI	OTC	TIME SERIES INTERNAL	KOSPI	0000! The number of weekly returns from the models data is 31. APT needs at least 22 weekly data points not to see	
KOSPI 6 P250 OTC US		DELTA APPROX INTERNAL	KOSPI 6 P2		
KOSPI	OTC	TIME SERIES INTERNAL	KOSPI	0000! The number of weekly returns from the models data is 31. APT needs at least 22 weekly data points not to see	
KOSPI 6 P240 OTC US		DELTA APPROX INTERNAL	KOSPI 6 P2		
KOSPI	OTC	TIME SERIES INTERNAL	KOSPI	0000! The number of weekly returns from the models data is 31. APT needs at least 22 weekly data points not to see	
KOSPI 6 P257.5 OTC U		DELTA APPROX INTERNAL	KOSPI 6 P2		
KOSPI	OTC	TIME SERIES INTERNAL	KOSPI	0000! The number of weekly returns from the models data is 31. APT needs at least 22 weekly data points not to see	
NIFTY 6 P4700 OTC US		DELTA APPROX INTERNAL	NIFTY 6 P47		

Front Arena's Trading Manger showing those asset IDs that have limited APT returns data

Additional benefits brought by the integration include:

- APT analysis based on real time updated price and position information
- User interface for ID mapping with clear error messages
- Selection of export method including contract parameters, synthetic representation and time series
- Delta-based approximation for derivatives not natively handled within APT

APT On FIS Hedge 360

FIS Hedge 360 is a service that can integrate multiple FIS products in the Asset Management space, which can be hosted as a turnkey solution. The Hedge 360 service supports the full investment life cycle across front-, middle- and back-office processes for hedge funds and alternative asset management firms.

The flexibility of the service approach allows clients to select their required integrations to meet their portfolio management, risk management, portfolio accounting, and reporting needs. For example, Front Arena (Front Office), APT (Middle Office), and VPM (Back Office) can be integrated as a client service. These are then hosted in a Citrix environment enabling clients to access and pay for these services on a Software-as-a-Service basis.

Additional benefits brought by the integration include:

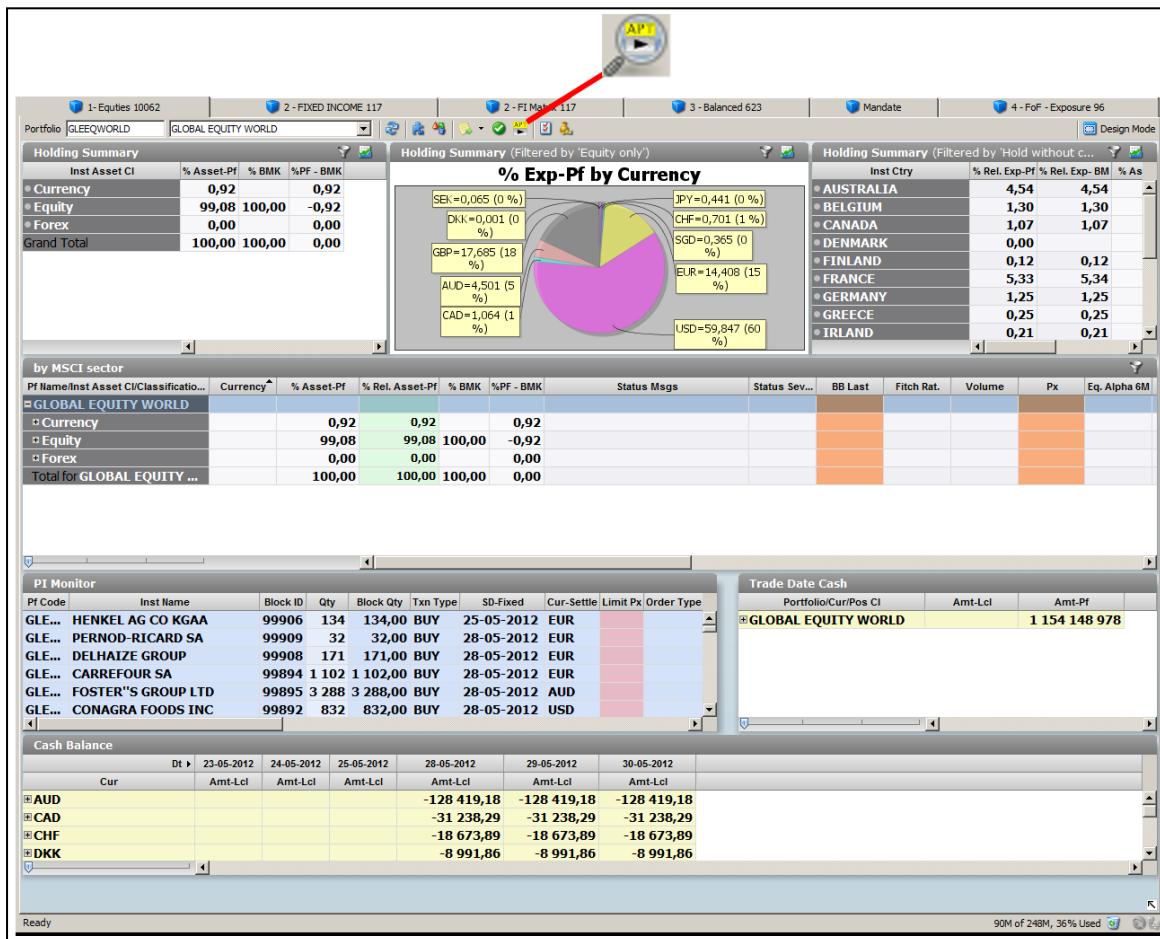
- Single deployment of APT (i.e. APT, Risk Factor Models, extension data tools, and so on) can be managed and hosted as a single solution.
- No loss of functionality, full implementation of all functionality in APTPro.
- Hosted deployment can be tailored to specific business needs.

APT On FIS Asset Arena

The coupling of APT with FIS Asset Arena, called Asset Arena Risk, integrates Asset Arena accounting and portfolio management components with APT's statistical market risk models. With both portfolio management and with risk reporting it is aimed at meeting key requirements for Institutional Asset Management companies.

Specifically, an APT plug-in enables Asset Arena users to extract simulated positions with live data for input into APT's risk reporting engine using an XML API. This allows standard VaR measures to be reported from online, real-time requests by clicking a dedicated APT button within the Asset Arena Manager window.

Figure: 5-5



The dedicated APT button in the Asset Arena Manager window

The risk output can be displayed in either the standard or your customized APT Risk Report format, and in your preferred Web browser. The underlying XML for these reporting requests can also be imported into APTPro 6 for use in portfolio optimization.

Additional benefits brought by the integration include:

- Managed portfolio positions can be reported on with standard VaR measures for compliance reporting.
- The same managed positions can be optimized from a risk/return perspective.

Chapter 6: Integration With Third Party Solutions

- "APT on FactSet" on page 42
- "APT on SimCorp Dimension" on page 43
- "APT on Opturo VIA" on page 44

APT On FactSet

APT's risk management system on FactSet represents a flexible and reliable solution. The combination of APT's robust risk models, the APT Optimizer for portfolio construction and the huge range of explanatory factors available on the FactSet platform leads to a system you can trust and which can be tailored to your investment process.

Product features

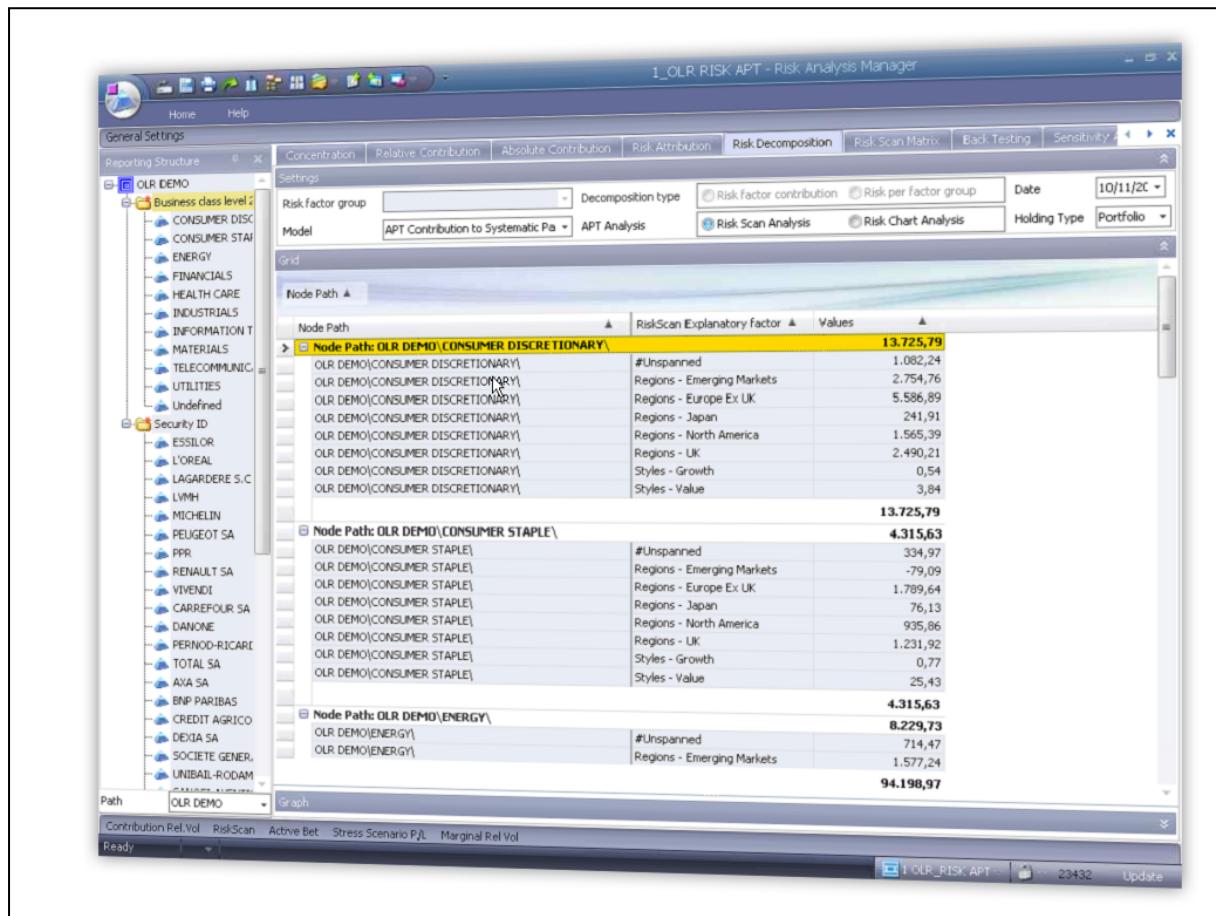
Risk analytics available from the APT FactSet application includes RiskScan factor-based analysis and position-based analysis. Coverage of assets includes equity, fixed income, real estate, mutual funds, hedge funds and commodities.

Optimize your portfolios using APT or third party risk models. Constraints, preference functions and thresholds are available at the portfolio, factor and security level giving full control over the portfolio construction process. When used in conjunction with APT's risk models you can expect reduced risk for the same return or improved return for the same risk.

APT On SimCorp Dimension

SimCorp Dimension provides an efficient solution for clients who want to understand the risk of your portfolio, without having to maintain your own risk models. Using the fully integrated "Reporting Plug-in" module, you can benefit from APT market leading risk models to explore and report on a wide range of risk analytics.

Figure: 6-1



SimCorp Dimension's Risk Analysis Manager showing APT RiskScan results

Product features

The APT on SimCorp Dimension is a complete integration covering all key APT risk measures, including RiskScan and RiskChart factor-based analysis, position-based analysis, fund of fund, scenario analysis and Monte Carlo VaR.

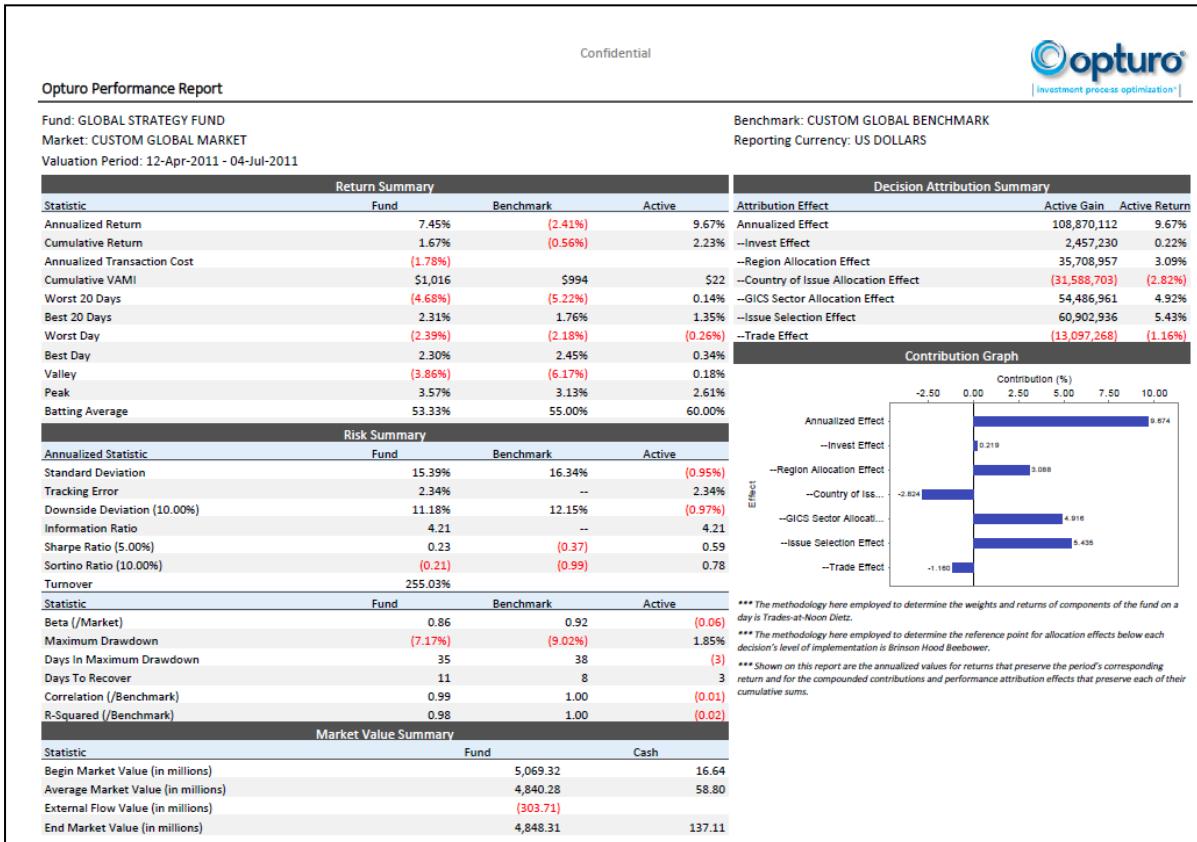
The integration covers mapping of all SimCorp Dimension asset classes onto the APT interface. It allows you to store all historical risk analytics (audit purposes), perform back-testing (regulation) and integrate with compliance for post-trade, risk-based compliance rules.

APT On Opturo VIA

Opturo Virtual Investment Analytics (VIA) is a performance and attribution tool that offers on-the-fly reporting to user-supplied portfolio holdings. The distributed nature of the many modules of the system means that client supplied data can be held in files, while the related market data can be held in separate database therefore leaving a minimal footprint in an organization and a system that can be deployed rapidly.

The system supports a dedicated APT_FACTOR module which produces factor exposures to user-defined market factors using the APT factor models. These factor exposures are then fed into the Performance and Attribution module to generate performance analysis, performance attribution and risk analysis measures, all of which can be combined into custom reports and various output formats on any periodic or scheduled basis.

Figure: 6-2



An Opturo VIA Performance Analysis Report

Product features

Detailed Excel, PDF and Custom reports, including time-series visualization of all input and created analytics using heat maps, line graphs and executive dashboards. These can be produced for Daily, Monthly, Custom Frequencies with Holiday conventions.

The analytics include:

- Performance: Computed at Portfolio-level, Segment-level (Sector, Industry etc.) and Security-level using one of the supported performance measurement methodologies including Buy & Hold, Trades-at-Open Dietz, Trades-at-Noon Dietz, Trades-at-Close Dietz, Purchases-at-Open Dietz and Follow the Money.
- Risk: Computed at the Portfolio and Segment levels for various risk measures that includes Beta, SD, Tracking Error, Information Ratio, Sharpe Ratio, Sortino Ratio and Maximum Drawdown.
- Attribution: Opturo offers a comprehensive set of improved attribution methodologies for Balanced, Equity and Fixed Income Portfolios to analyze Active Return and Active Risk. The supported methodologies include: Decision Attribution, Multi-Factor Attribution, and Fixed Income Analysis.

Product details

- **How is it deployed?** By deploying a set of distributed Java modules.
- **APT responsibilities:** provision of Risk Model (available for download via FTP/HTTP) and Desktop software.
- **Client responsibilities:** the construction of portfolio and benchmark compositions. Data can be sourced from a variety of sources including Text, Excel, and Oracle, scrubbed, validated and analyzed and then exported to range of data sources including customized reports. APT Risk Models downloaded and available within your local area network. Software installation.

Benefits

- Fast deployment lead time
- Flexible reporting
- Small footprint in investment company's infrastructure

Chapter 7: APT Workflow And Data Integration Tools

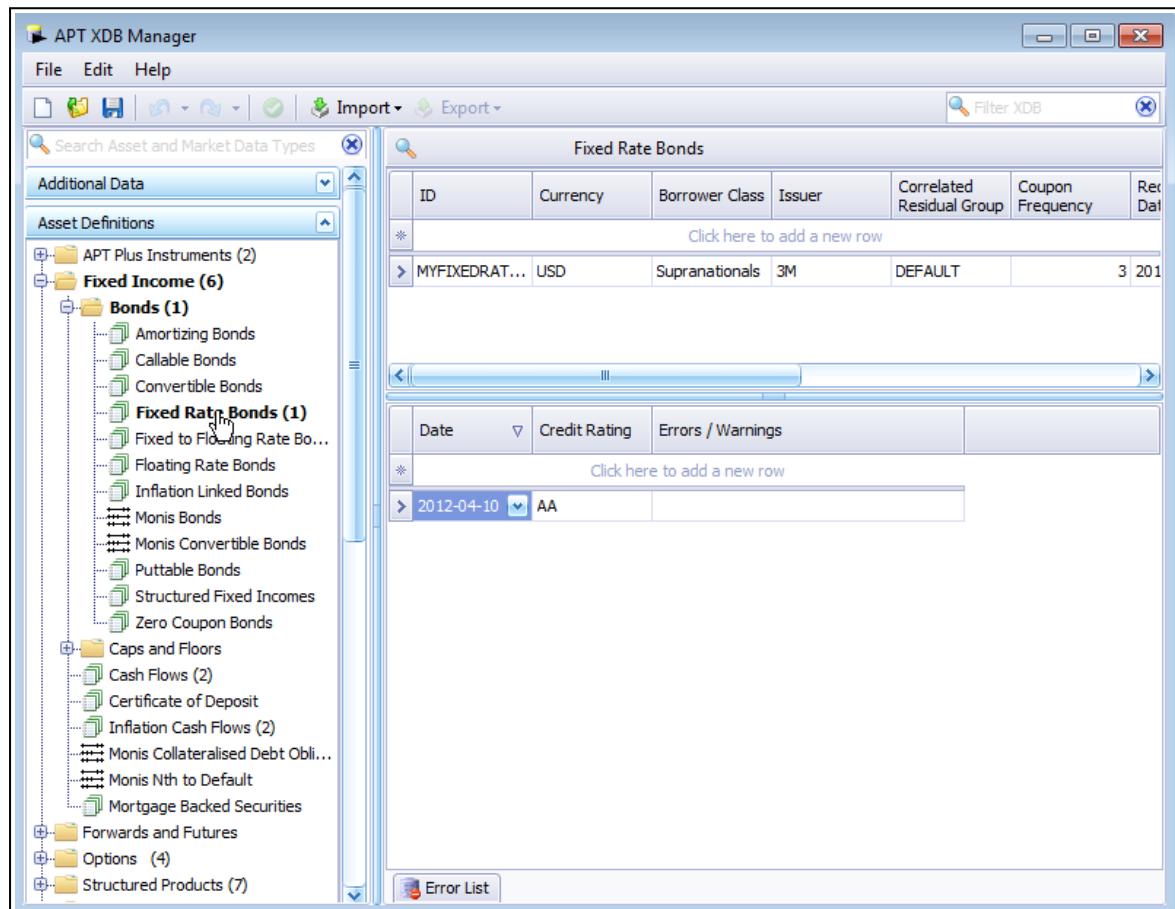
Data management is a significant challenge for any risk management solution. APT provides a number of off-the-shelf and customizable components to help ease data workflow and integration tasks:

- "APT XDB Manager" on page 48
- "Bloomberg Adapter" on page 49
- "Monis Data Service (MDS)" on page 50
- "EasyAPT Data Mapping Tool" on page 51
- "Eze Castle Data Plug-In" on page 53

APT XDB Manager

The APT XDB Manager allows users to add instruments that are missing from the risk models by providing either the contract definitions or the return series. It has an easy-to-use User Interface for inputting, viewing and editing terms and conditions.

Figure: 7-1



APT XDB Manager

It is also used to supply the market data for all assets in the APT system, whether or not they are available in your risk models or set up in the APT XDB Manager.

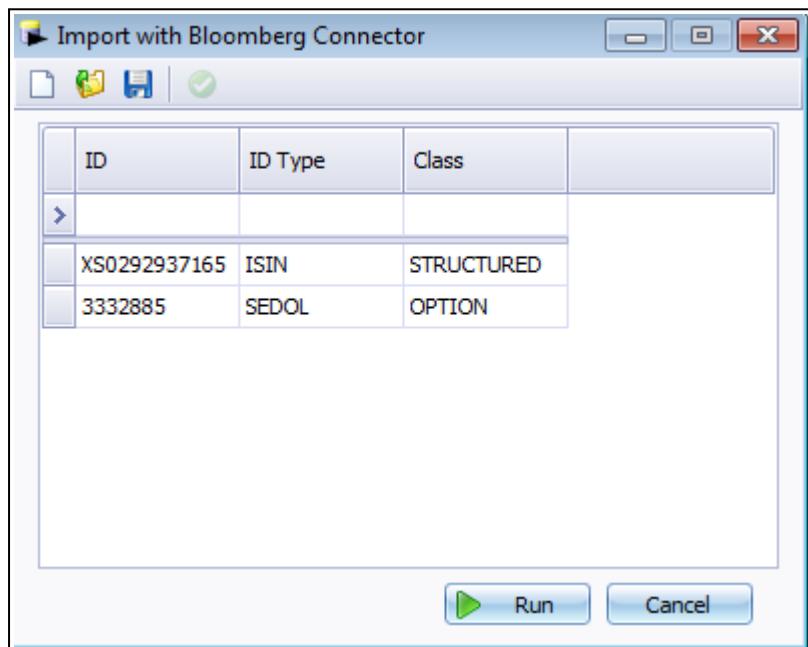
The XDB manager is also available as a Command Line (CLI) interface, which would typically be used in a larger scale deployment where it can be invoked automatically via its command line functions.

Bloomberg Adapter

For End Users that have a Bloomberg Terminal installed locally on their computer, you can use a Bloomberg Adapter within the XDB Manager to import terms and conditions, and update market data, from Bloomberg for a list of specified assets.

The Bloomberg Adapter can be run either directly from the APT XDB Manager user interface or from its CLI interface.

Figure: 7-2



XDB Manager Bloomberg Connector

Monis Data Service (MDS)

MDS is a Web-based service that provides coverage of the global convertible bond and bond futures markets. This includes international convertible bonds, hybrids, and convertible preferred securities, and covers a large proportion of the international equity-linked securities market. Instrument data is supplied in a proprietary XML format and can be downloaded directly from the Web server without the need to use a browser. A valid MDS logon is a required pre-requisite to use the system.

Figure: 7-3

The screenshot shows the 'Browse MDS universe' window. At the top, it displays 'Browse MDS universe: 1642 instruments found'. Below this is a table with columns: Name, Region, CUSIP, ISIN, Stock BBG symbol, Stock RIC, and Issue date. The table lists various instruments, such as 3D Systems Corporation, 930862 Canada Inc, A M Castle and Co, etc., with their respective details. A 'View change history...' button is located at the bottom right of the table area. Below the table, there are sections for 'Query MDS': 'Select data source' (Data source: CB universe), 'Select instrument status' (Active is checked, while Defaulted, Called, Converted, Expired, Put, and Repurchased are unchecked), 'Select regions' (Americas, Asia, Europe are selected), 'Select new issues from' (radio buttons for past 24 hours, past week, and past month), and 'Query details' (multiple dropdown menus for percentage pass-through values). At the bottom of the window are buttons for 'Run query', 'Clear query', 'Clear query and refresh from MDS', 'Help', 'Save to XML file', 'Add all instruments...', 'Add selected instruments...', and 'Close'. A copyright notice at the bottom states: 'Copyright © 2011, American Bankers Association CUSIP Database provided by the Standard & Poor's Financial Services LLC. All rights reserved.'

The Monis MDS Browser

The APT XDB Manager incorporates full access to Monis Data Service (MDS), which allows all of the necessary convertible bond terms and conditions, in addition to the market data required for the integration to be downloaded and used for calculation with APT Analytics. This includes the constituents of the common convertible bond benchmarks.

EasyAPT Data Mapping Tool

When using the EasyAPT worksheets, the task of setting up compositions, checking assets against the APT risk factor model, and identifying and proxying missing assets, can be managed by a Data Mapping Tool. A supplied Excel spreadsheet called `Mapping.xls` helps you specify where your factor models, composition files, and so on, are located, and contains an automated workflow which you can configure to include/exclude specific steps.

Figure: 7-4

Workflow		Status
1. Import and process data		
	<input checked="" type="checkbox"/> Clear workbook	Completed
	<input type="checkbox"/> Check Input Parameters	
	<input checked="" type="checkbox"/> Run before import procedure	Completed
	<input checked="" type="checkbox"/> Import Portfolio, Benchmark and Undl Basket	Completed
	<input checked="" type="checkbox"/> Check asset types parameterisation	Completed
	<input checked="" type="checkbox"/> Run after import procedure	Completed
	<input checked="" type="checkbox"/> Fill missing assets table	Completed
2. Run proxy transcodification		
	<input checked="" type="checkbox"/> Check proxies	Completed
	<input checked="" type="checkbox"/> Create XDB or synthetics for proxies	Completed
3. Process instruments		
	<input checked="" type="checkbox"/> Process all Instruments	
		<i>Cash</i>
		<i>Option</i>
		<i>Warrant</i>
		<i>Future</i>
		<i>CFD</i>
		<i>CDS</i>
		Completed

EasyAPT Data Mapping Tool

The automated workflow covers

- Import and process data
- Run proxy trans-codification
- Process instruments
- Load external data
- Create underlying baskets
- Create missing assets
- Create portfolios and benchmarks

This can be run once before you start using the EasyAPT sheets, to ensure that all of the required assets, and their market data is available.

Eze Castle Data Plug-In

A dedicated APTPro plug-in is now available for use with the Eze Castle trade order management system. APT clients can ask Eze to export their overnight positions to a suitable location. The trade order data will be in the required format for input into APTPro, and can be simply imported through Pro's **Import** menu.

Chapter 8: Professional Services

APT works closely with customers pre-sales, during installation and post implementation. In order to support the unique requirements of each of our customers, the global APT Professional Services team, based in eight locations around the world, is equipped to offer specialized support and consulting services, including:

- Software installation
- Product customization
- Training
- Bespoke development and integration
- Audit documentation

Benefits Of Using APT Professional Services

The benefits are numerous, they include:

- Maximizing the usefulness of your integrated APT system.
- Ensuring that all your staff is trained to use the system appropriately.
- Getting expert advice on analyzing your portfolio within APT.
- Generating high volumes of reports without the need for any integration or API usage.

The background image shows a modern architectural structure with a large glass facade and a curved roof supported by a steel frame. The interior appears to be a spacious, well-lit area with a grid-patterned ceiling.

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youtube.com/user/FISTVToday

The FIS logo consists of the letters "fis" in a bold, white, sans-serif font. Above the letter "f", there are three small, light blue dots arranged horizontally.